

CLAIM AMENDMENTS:

1. (previously presented) A detector for detecting electrically neutral particles, having

a detector housing which at least in certain regions is filled with a counting gas,

a multiplicity of converter devices arranged in cascade form in the detector housing for generating conversion products as a result of the absorption of the neutral particles which are to be detected, the conversion products generating electrically charged particles in the counting gas, each of said converter devices comprising an insulator layer having opposite first and second surfaces, a first conductive layer and a second conductive layer disposed respectively on the first and second surfaces of the insulator layer such that the first and second conductive layers are electrically insulated from one another by the insulator layer, and at least one converter layer arranged on at least one of the first conductive layer and the second conductive layer to define an outermost part of the respective converter device,

at least one readout device for detecting the electrically charged particles,

at least one electrical drift field device for generating an electrical drift field for the electrically charged particles in at least a region of the volume of the counting gas in such a manner that at least some of the electrically charged particles drift toward the readout device, the converter device being of charge-transparent design and being arranged in the detector housing in such a manner that the drift field passes through at least part of the converter device.

2. (previously presented) The detector as claimed in claim 1, in which the converter device has a multiplicity of passages, for the electrically charged particles.

3. (previously presented) The detector as claimed in claim 2, in which the passages have a minimum diameter of between 10 μm and 1000 μm , and a minimum spacing of 10 μm to 500 μm .

Claim 4 (canceled).

5. (previously presented) The detector as claimed in claim 1, in which a region of the converter device which is active in the conversion is arranged substantially perpendicularly in the drift field.

6. (previously presented) The detector as claimed in claim 1, in which the device for generating a drift field has a structured drift electrode to generate the drift field between the drift electrode and the readout device.

Claim 7 (canceled).

8. (previously presented) The detector as claimed in claim 1, in which the first conductive layer and the second conductive layer are electrically connected to a device for generating a converter field.

9. (previously presented) The detector as claimed in claim 8, in which the converter layer is a neutron converter layer which contains at least one of lithium-6, boron-10, gadolinium-155, gadolinium-157 and uranium-235.

10. (previously presented) The detector as claimed in claim 9, in which the converter layer has a layer thickness of from 0.1 μm to 10 μm , the first and second conductive layers have a layer thickness of from 0.1 μm to 20 μm , and the insulator layer has a layer thickness of from 10 μm to 500 μm .

11. (previously presented) A converter device for a detector for detecting electrically neutral particles, the converter device having an insulator layer with opposite first and second surfaces, a first conductive layer and a second conductive layer disposed respectively on the first and second opposite surfaces of the insulator layer such that the first and second conductive layers are electrically insulated from one another by the insulator layer arranged between them, and at least one solid converter layer which is arranged on at least one of the first conductive layer and the second conductive layer, the converter device having a multiplicity of passages for electrically charged particles.

12. (previously presented) The converter device as claimed in claim 11, said at least one solid converter layer contains a neutron converter material selected from the group consisting of lithium-6, boron-10, gadolinium-155, gadolinium-157 and uranium-235.

13. (previously presented) A method for producing a converter for a detector for detecting electrically neutral particles comprising the following steps:

providing a plurality of insulator layers, each said insulator layer having opposite surfaces and two electrically conductive layers disposed respectively on the opposite surfaces of each respective insulator layer, so that the electrically conductive layers are electrically insulated from one another, said single insulator layer and the electrically conductive layers adjacent thereto defining a converter device;

providing a converter layer arranged on at least one of the conductive layers of each said converter device; and

arranging a plurality of the converter devices in a cascade form.

14. (previously presented) A detection method for detecting electrically neutral particles comprising the following steps:

trapping the electrically neutral particles which are to be detected using a plurality of converter devices arranged in a cascade form for generating conversion products when the neutral particles are absorbed, each said converter device having an insulator with two opposite surfaces, two electrically conductive layers disposed respectively on the opposite surfaces of the insulator so that the electrically conductive layers are electrically insulated from one another, a converter layer being provided on at least one of the conductive layers of each said converter device;

generating electrically charged particles in a counting gas by means of the conversion products;

diverting the electrically charged particles in an electrical drift field to a readout device, at least some of the electrically charged particles being passed through the converter devices through a multiplicity of passages, which are arranged in the form of a matrix, in the converter devices; and

detecting the electrically charged particles in the readout device.

15. (new) The detector as claimed in claim 1, wherein the insulator layer in each of said converter devices is the only insulator layer thereof.

16. (new) The detector as claimed in claim 11, wherein the insulator layer in each of said converter devices is the only insulator layer thereof.

17. (new) The method of claim 13, wherein the insulator layer in each of said converter devices is the only insulator layer thereof.

18. (new) The method of claim 14, wherein the insulator layer in each of said converter devices is the only insulator layer thereof.